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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,329	11/21/2003	Qinghong Wang	03-0168 (BOE 0458 PA)	2616

7590 06/22/2004
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EXAMINER

HOLZEN, STEPHEN A

ART UNIT	PAPER NUMBER
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3644

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/719,329

Applicant(s)

WANG, QINGHONG

Examiner

Stephen A. Holzen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on filing of the application.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-19, 21-35 and 37-40 is/are rejected.
- 7) ☒ Claim(s) 9, 20 and 36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/21/2003
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 11-19, 21, 22, 24, 25, 26-35, 37, 38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Rudolph et al (4,161,780).

Re - Claims 1-3: Rudolph et al discloses a controller for a satellite comprising a slew rate command generator (10) generating a slew rate command signal in response to an attitude error signal (error signal = difference between current and desired attitude Col. 1, lines 55-60), said slew rate command generator introducing a phase lag into said slew rate command signal (see Col. 2, lines 1-10 for delay shifting of SRT).

Re - Claims 4 and 5: Rudolph et al discloses a controller comprising a slew rate commanded generator (10) a slew rate command signal (Col. 1, 55-60) spin phase synchronization when said target attitude is unsynchronized in spin phase with said initial attitude (see Col. 1, lines 55-60), a phase lead (see col. 2, lines 1-10, delay register)

Re - Claims 6-7: Rudolph et al discloses a reorientation system having a controller (10), which generates an error (difference in desired and current attitude and spin rate see Col. 1, lines 55-60), a phase lead into said slew rate command signal (see Col. 2, lines 1-10), which uses a trajectory shaped logic (see Col. 2, lines 5-15).

Re - Claims 11-19: Rudolph disclose spin phase synchronization, its introduction and the compensation for lag time and bandwidth, and phase lead in Col. 1 lines 55-60 and Col. 6, lines 1-10.

Re - Claims 21 and 22: Rudolph inherently discloses an acceleration command signal in response to a position error signal and a rate error signal and to a position error signal where the SRT is controlling the spin rates and requires actuator forces to reorient the attitude and spin of the satellite.

Re - Claims 24 and 25: Rudolph discloses a Satellite reorientation system for a satellite having a controller (10) which generates a slew rates command signal said controller performs spin phase synchronization (see Col. 1, lines 55-65), and at least one control actuator (27-30), wherein one control actuator is a thruster.

Re - Claims 26-35, 37, 38, 40: Rudolph discloses a method of reorienting the spin axis of a satellite comprising generating a slew rate command signal in response to an initial attitude and a target attitude (see col. 1, lines 55+), introducing a phase lead into said slew rate command signal (see Col. 6, lines 1-10), adjusting attitude of the satellite in response to said slew rate command signal (see SRT under the control of an external processor), determining an angular position error in response to said initial attitude and said target attitude, and generating said slew rate command signal in response to said angular position error vector (see Col. 5, lines 59), applying position and rate controls in response to said angular position error vector and adjusting attitude of a spin axis of the satellite in response to said slew rate command signal (see Col. 1, lines 35-40 and Col. 1, lines 25-30), further controlling a spin axis trajectory of the satellite during a reorientation maneuver (see Col. 1 lines 35-40), further comprising performing a minimum angle spin axis reorientation of a satellite (see Col. 1, lines 25-31), wherein performing a minimum angle spin axis reorientation comprise introducing said phase lead with a value approximately equal to a phase lag (see col. 2, lines 1-10,

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 10, 23, 30, 38, rejected under 35 U.S.C. 103(a) as being unpatentable over Rudolph et al in view of Whitmore. Rudolph et al disclose every aspect of the present invention except wherein said controller introduces said phase lead using trajectory shaping logic in the form of a matrix and wherein said controller introduces said phase least using a matrix that is re-programmable. Whitmore however teaches that it is known in the art to introduce a phase lead using a matrix and wherein that matrix is re-programmable. (see Column 5 lines 55-65 and Col. 6, lines 1-10). It would have been obvious to one having ordinary skill in the art, at the time the invention was made to combine these references for increasing the efficiency and accuracy of the controller of Rudolph.

5. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rudolph et al in view of Whitmore. Rudolph discloses every aspect of the present invention except wherein the shaping logic is in the form of a shaping matrix. Whitmore however teaches that it is well known in the art to use matrices for shaping the trajectory of a satellite maneuver (see col. 5, lines 55-65). It would have been obvious to one having ordinary skill in the art, at the time the invention was made to combine these references for increasing the efficiency and accuracy of the controller of Rudolph.

Allowable Subject Matter

6. Claims 9, 20 and 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Re - Claim 9: the prior art made of record does not teach introducing said phase leas using a shaping matrix that has a default approximately equal to an identity matrix.

Re - Claim 20: the prior art made of record does not each a controller generating a rate error signal through summation of said slew rate command signal and a spin rate command signal and subtraction of a satellite angular rate signal.

Re - Claim 36: the prior art does not teach performing spin phase synchronization when a spin axis of the satellite is approximately equal to a non-geometric body axis.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 703-308-2484. The examiner can normally be reached on M-F 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Carone can be reached on 703 306-4198. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MICHAEL J. C. MCNE
SUPERVISORY PATENT EXAMINER